

ABSTRACT OF THE DISCLOSURE

A system for surface or cross-sectional processing and observation and a method of surface or cross-sectional processing and observation using the system. The system has a unit for processing a sample surface to expose a target surface or cross section and a scanning probe microscope unit for observing the exposed surface or cross section. According to the system and method, a scanning probe microscope capable of providing different kinds of information is used to form at least one target surface or cross section in a sample surface and to observe the target surface or cross section. This offers the following advantages: a spatial resolution comparable to that of a transmission electron microscope can be achieved; and electric, magnetic, and mechanical information for a target sample plane, which couldn't be obtained by the known method, can be monitored in a shorter operating time.